Integration of Land Cover Trends Field Photography with an Online Map Service

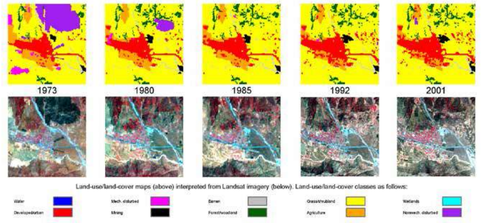
Christopher Soulard, Jason Sherba, and Ryan Longhenry

Abstract

The Land Cover Trends field photography collection is a national-scale, ground-reference dataset which initially served as a research tool to aid in Landsat-derived land-use/land-cover change analyses and assessments. Between 1999 and 2009, Land Cover Trends scientists collected over 33,000 geographically referenced field photos with associated keywords describing the underlying LULC and change process taking place. This controlled, reliable field photography collection represents the most comprehensive national database of geo-referenced photography in the United States. CDI funding will support the effort to add geotags and keywords to digital copies of each photo, ingest, manage, and host all tagged photos in Earth Explorer with help from collaborators at the USGS Earth Resources Observation and Science (EROS) Center, and complete ongoing web portal environment to serve digital photography alongside other geospatial data. Within 5 months, researchers, land managers, and citizens will be able to efficiently search and download over 20,000 Land Cover Trends field photos within the USGS Earth Explorer web-based user interface.

Data and Information Assest Value

Ground Truth/Training Data



Long Term Change Detection/Repeat Photography

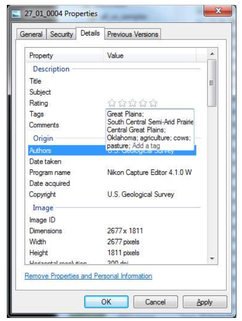
Data Input

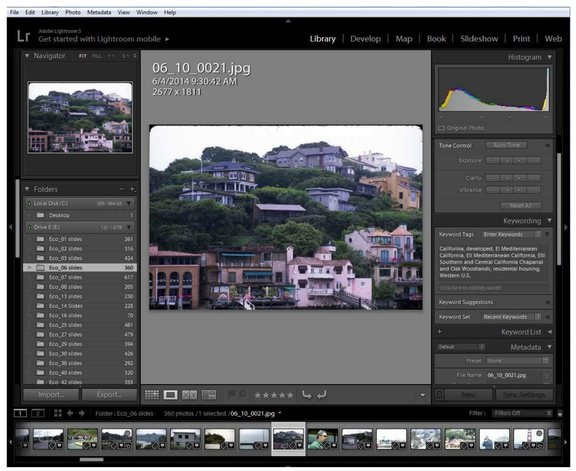
The Land Cover Trends field photographs were collected and catalogued across 84 U.S. ecoregions. Each photograph (JPEG) has coordinates, collection date/time, keywords, Anderson Level I land cover class, and ecoregion name stored in a spreadsheet (XLS).

New File Name	BLOCK #	DESCRIPTION	LAT	LONG	COMMENT
27_01_0001.jpg	2007	Vista Shot	35.2038	-98.0665	CRTD 14:36 23-JUN-05
27_01_0002.jpg	2007	Rural Home	35.2037	-98.0732	CRTD 14:39 23-JUN-05
27_01_0003.jpg	2007	Oil Derrick	35.2037	-98.0840	CRTD 14:41 23-JUN-05
27_01_0004.jpg	2007	View of Pasture	35.1746	-98.1022	CRTD 14:47 23-JUN-05

Data Preparation

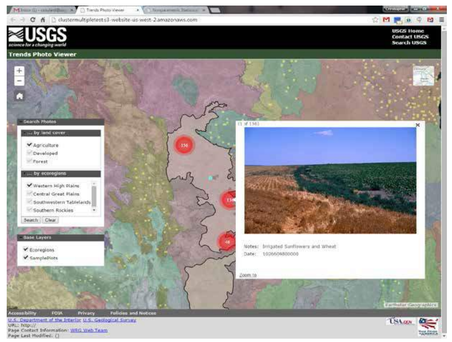
Metadata tags are created by assigning coordinates to each photo using Python and by manually entering keywords in Adobe Lightroom. Metadata tags will allow photos to be searched online, either by geographic location or by keyword.





Data Portal

All tagged photography will be transfered to EROS Center mass strorage servers where the metadata will be extracted during the ingest process to make field photographs searchable by end users of the USGS Earth Explorer online map service.



Tagged photography will also be added to a land cover change viewer currently in development to present photographs within a land-use/land-cover change context. Currently, cloud and local server costs are being evaluated, with MapBox, Leaflet, or ArcGIS for Javascript are being explored as the API.